TITLE OF THE INVENTION

Simulation of Business Transformation Outsourcing

CROSS-REFERENCES TO RELATED APPLICATIONS, AND COPYRIGHT NOTICE

The present application is related to a co-pending patent application entitled Simulation of Business Transformation Outsourcing of Sourcing, Procurement and Payables, filed on even date herewith. This co-pending application is assigned to the assignee of the present application, and herein incorporated by reference. A portion of the disclosure of this patent document contains material which is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all copyright rights whatsoever.

FIELD OF THE INVENTION

The present invention relates generally to computer modeling or simulation, and more particularly to methods and systems of simulation of complex services.

BACKGROUND OF THE INVENTION

Organizations who will pay for receiving complex services, need to estimate the costs and benefits of (i.e. the "business case" for) the services. So do those providing the services. For example, one area of concern is the estimated cost to the provider of providing services, which is distinct from the price that a customer or client will pay for receiving the services. Such estimation can be very difficult, for complex business scenarios with many variables. This is true of business transformation outsourcing, for example. "Business transformation outsourcing" (BTO) refers to arrangements where a service provider assumes responsibility for performing one or more business processes. A wide range of business processes may be involved, including human resources, customer relationship management, shipping, finance, accounting, insurance claims processing, banking back office services, and many others. BTO

typically involves changing the business process through information technology. This may include a core business process.

These arrangements may involve multiple alternatives, affecting many employees and business partners, or affecting many computers, networks and software applications, for example. Thus these arrangements are difficult to evaluate. This problem is not addressed by known simulation technology. There are simulators of business processes, but they do not show the impact of business transformation outsourcing with various alternatives.

Thus there is a need for computer simulation, that shows the effects of various conditions and decisions, pertaining to a wide range of business transformation outsourcing services.

SUMMARY OF THE INVENTION

An example of a solution to problems mentioned above comprises: performing a benefits simulation, performing a process simulation, performing an information technology simulation, performing a value simulation, providing interactions among the simulations, and representing with the simulations the use of at least one business transformation outsourcing service by a client organization.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the present invention can be obtained when the following detailed description is considered in conjunction with the following drawings. The use of the same reference symbols in different drawings indicates similar or identical items.

FIG. 1 illustrates a simplified example of a computer system capable of performing the present invention.

FIG. 2 is a block diagram illustrating an example of simulation of Business

Transformation Outsourcing services.

FIGS. 3A and 3B make up a flow chart, illustrating an example of a BTO simulation process.

FIGS. 4A and 4B make up a block diagram, illustrating an example of systems and methods of simulation, including different modes for different end-users.

FIG. 5 is a diagram illustrating one example of output from simulations.

DETAILED DESCRIPTION

The examples that follow involve the use of one or more computers and may involve the use of one or more communications networks. The present invention is not limited as to the type of computer on which it runs, and not limited as to the type of network used.

The following are definitions of terms used in the description of the present invention and in the claims:

"Application" means any specific use for computer technology, or any software that allows a specific use for computer technology.

"Benefits input" means any data utilized in computing measurements regarding economic benefit.

"Benefits simulation" means any simulation regarding economic benefits.

"Business process" means any function performed by any enterprise, group, or organization; the function may involve providing goods or services of any kind, or may involve internal matters. The function may include, but is not limited to, sourcing, procurement, payables, human resources, customer relationship management, shipping, finance, accounting, insurance claims processing, and banking back office services.

"Business transformation outsourcing service" means any arrangement where a service provider assumes responsibility for performing one or more business processes. This may include changing the business process through information technology. This may

include a core business process, but it is more likely that clients will outsource non-core business processes, since this allows them to focus on their remaining core processes. "Business transformation outsourcing" (BTO) is a broader term than "business process outsourcing," which implies lower labor rates for performing a non-core business process.

"Client-server application" means any application involving a client that utilizes a service, and a server that provides a service. Examples of such a service include but are not limited to: information services, transactional services, access to databases, and access to audio or video content.

"Comparing" means bringing together for the purpose of finding any likeness or difference, including a qualitative or quantitative likeness or difference.

"Component" means any element or part, and may include elements consisting of hardware or software or both.

"Computer-usable medium" means any carrier wave, signal or transmission facility for communication with computers, and any kind of computer memory, such as floppy disks, hard disks, Random Access Memory (RAM), Read Only Memory (ROM), CD-ROM, flash ROM, non-volatile ROM, and non-volatile memory.

"Cost-benefit assessment" means any comparison or evaluation involving costs and benefits.

"Information technology input" means any data utilized in computing measurements regarding the use of information technology.

"Information technology simulation" means any simulation regarding the use of information technology.

"Mapped" or "Mapping" refers to associating, matching or correlating.

"Measuring" means evaluating or quantifying; the result may be called a "Measure" or "Measurement".

"Output" or "Outputting" means producing, transmitting, or turning out in some manner, including but not limited to printing on paper, or displaying on a screen, writing to a disk, or using an audio device.

"Process input" means any data utilized in computing measurements regarding a business process.

"Process simulation" means any simulation regarding a business process.

"Project" means any assignment, enterprise, job, undertaking or venture, in any industry or profession; for example, it may involve providing services, or a mixture of goods and services.

"Sourcing" means finding and utilizing preferred suppliers.

"Spending input" means any data utilized in computing measurements regarding spending.

"Spending simulation" means any simulation regarding spending.

"State" means any set of stored data at some point in time.

"Storing" data or information, using a computer, means placing the data or information, for any length of time, in any kind of computer memory, such as floppy disks, hard disks, Random Access Memory (RAM), Read Only Memory (ROM), CD-ROM, flash ROM, non-volatile ROM, and non-volatile memory.

"Value input" means any data utilized in computing measurements regarding economic impact.

"Value simulation" means any simulation regarding economic impact.

FIG. 1 illustrates a simplified example of an information handling system that may be used to practice the present invention. The invention may be implemented on a variety of hardware platforms, including embedded systems, personal computers, workstations, servers, and mainframes. The computer system of FIG. 1 has at least one processor 110. Processor 110 is interconnected via system bus 112 to random access memory (RAM) 116, read only memory (ROM) 114, and input/output (I/O) adapter 118 for connecting peripheral devices such as disk unit 120 and tape drive 140 to bus 112. The system has user interface adapter 122 for connecting keyboard 124, mouse 126, or other user interface devices such as audio output device 166 and audio input device 168 to bus 112. The system has communication adapter 134 for

connecting the information handling system to a communications network 150, and display adapter 136 for connecting bus 112 to display device 138. Communication adapter 134 may link the system depicted in FIG. 1 with hundreds or even thousands of similar systems, or other devices, such as remote printers, remote servers, or remote storage units. The system depicted in FIG. 1 may be linked to both local area networks (sometimes referred to as intranets) and wide area networks, such as the Internet.

While the computer system described in FIG. 1 is capable of executing the processes described herein, this computer system is simply one example of a computer system. Those skilled in the art will appreciate that many other computer system designs are capable of performing the processes described herein.

FIG. 2 is a block diagram illustrating an example of simulation of Business Transformation Outsourcing services. Beginning with an overview, this example involves Business Transformation Outsourcing (BTO) deals (i.e. deals involving outsourcing of business processes, where the business processes may be substantially changed, often through information technology [IT]). BTO simulation may be used to demonstrate, or estimate, benefits and costs of proposed outsourcing deals. A service provider may use BTO simulation to develop and revise proposals to a prospective client organization. A service provider may use BTO simulation during the course of an engagement with a client organization, to adjust to new scenarios.

Continuing with an overview of this example in FIG. 2, Business Transformation Outsourcing simulation generally comprises four interlocking simulations: Benefits (simulation 211), Process (simulation 214), IT (IT transformation simulation 216), and Value (simulation 223). The Benefits (simulation 211) simulation shows how BTO could generate business benefits for the client over a multi-year horizon. (Each BTO service has different benefits.) The Process simulation 214 and IT transformation simulation 216 show how mature processes, skilled staff, and innovative technology enable those

benefits. Finally, the Value simulation 223 shows the potential impact of all the foregoing on the client firm's market valuation and share price, for example.

This example in FIG. 2 shows the effects over time of various conditions and decisions (e.g. see blocks numbered 200 and 207-210) pertaining to Business Transformation Outsourcing (BTO) of various services. This example involves simulating business cases (i.e., the connection between BTO services and their impact on the economic value of the client firm, shown by block 224, "Economic value"). This example involves interlocking simulations (i.e., providing interactions among simulations, shown by arrows). For instance, outputs from business benefits simulation 211, Process simulation 214, and IT transformation simulation 216 provide input to Value simulation 223, via net savings, block 220. Some inputs may affect more than one simulation. Such interactions are shown by multiple arrows leading away from BTO Services block 210, and IT Transformation Periods block 212.

This example in FIG. 2 involves performing a business benefits simulation (block 211). Business Transformation Outsourcing of various services are simulated, subject to various assumptions and alternatives, including adoption of IT (shown by block 213, "IT Transformation assumptions"). Thoroughly analyzing the effects of alternatives over a multi-year, multi-country deal is something that cannot be done without BTO simulation. BTO simulation makes what would otherwise be an unsolvable problem solvable.

Turning now to some details of this example in FIG. 2, consider business benefits simulation 211 – (Simulations are numbered for reference, but a change in one is automatically reflected in all the others, if applicable.) Services such as human resources (HR), customer relationship management (CRM), and finance and accounting (F&A) each utilize a unique front-end simulation (at 211) of the business benefits of that particular BTO Service. On the other hand, simulations of BTO for human resources, customer relationship management, and finance and accounting

reuse much of the back-end simulations (the Process simulation 214, IT simulation 218 and Value simulation 223).

The business benefits simulation 211 for sourcing, procurement, and payables is the spending simulation, which is partially applicable to finance and accounting. (It is applicable to payables, but not other finance and accounting services, such as receivables or taxes.)

The business benefits simulation 211 for human resources simulates [1] the transformation of human resources from a separate business function focused mainly on recruiting, hiring, promotion, and layoff transactions to an integral part of what all managers do with the aid of on - demand human resources systems, and [2] the resulting refocusing of the remaining human resources services onto strategic issues, such as education, diversity, compensation, retention, and benchmarking. The sourcing, procurement, and payables business benefits simulation at 211 directly quantifies its benefits in dollars saved (at 215). On the other hand, the human resources business benefits simulation at 211 preferably quantifies first in terms of improved education levels, diversity, compensation benchmarks, and retention rates; then in terms of the dollar impact (at 215) of those improvements, which may be reflected in higher productivity as well as dollars saved.

Block 215 in FIG. 2 represents measures of business benefits in general. Savings is a primary benefit of sourcing, procurement, and payables services, and some savings will arise from other BTO services as well. A primary benefit of other BTO services may be something other than savings. This is particularly true in the areas of CRM and HR, where the primary business benefits could turn out to be things like higher customer service levels, increased market share, increased revenue, higher employee satisfaction, more effective employee recruiting, and increased employee retention.

The business benefits simulation 211 for customer relationship management simulates [1] the direct impact of implementing one or more customer relationship management solutions, such as a self-serve web site and/or a voice response unit (VRU) in lieu of some calls handled to date by human customer service agents, [2] the indirect impact of having a full 360-degree view of customers, such as fewer calls, shorter calls, or higher customer satisfaction, and [3] the impact of new markets and market segmentation made possible by customer relationship management, such as higher levels of customer service for "preferred customers." (The term, "360-degree view," refers to the ability of an organization to see all of its interactions with a given customer regardless of when, where, or how those interactions occurred, including by phone, VRU, web site, e-mail, instant messaging, fax, pager, web meeting, in person, etc. This also involves steering current and future interactions onto the lowest-cost / highest-effectiveness channel.) Thus, the business benefits of BTO customer relationship management may be quantified in terms of higher productivity, higher profitability, and higher customer satisfaction, as well as dollars saved (at 215).

Finally, the business benefits simulation 211 for finance and accounting simulates [1] efficiencies in transaction processing due to implementation of finance and accounting solutions, such as financial software packages, and labor arbitrage by moving manual work to wherever lower-cost resources are available, [2] higher service levels available from finance & accounting professionals whose career path has been changed from "back office" to "front office," [3] more sophisticated opportunity identification by professionals specializing in areas not well served before outsourcing, such as lease accounting or pension financing, and [4] compliance with regulations and laws, such as Sarbanes-Oxley. (The terms "back office" and "front office" refer to the fact that the business processes most likely to be outsourced are those that are not a core competency. However, once the processes have been outsourced, the people performing those business processes have moved from the "back office" of their old employer to the "front office" of their new employer, where their new responsibility is to

serve the outsourcer's customers, which may include their former employer as well as other customers.)

Consider an example of output (at 215) from a spending simulation for sourcing, procurement and payables, as one particular instance of business benefits simulation 211. Results may be presented in a spreadsheet, with a row for each month, from Month 1 of Year 1, to the simulation horizon. Each month has a status label (As Is, Transition, or To Be). Spending savings (one particular instance of business benefits savings, block 215) may be represented by a column for monthly spending savings, and a column for cumulative spending savings. Non-zero values may begin to appear in columns for spending savings, in the first transition month.

Next, consider process simulation 214. A flow model shows how transactions flow through the subprocesses underlying sourcing, procurement, and payables. The rate at which information technology and lower-cost resources are substituted for the old way of performing the business process affects how many transactions there are, where they flow, and what they each cost to process.

Process inputs for process simulation 214 are shown by "cost assumptions" 207, "productivity assumptions" 208, "cycle time assumptions" 209, and "BTO services" 210. The process simulation 214 computes the number of transactions during each period, subject to the status of each period (As Is, Transition, or To Be) In some examples, business process simulation 214 may be a flow model, not a queuing model (i.e. it shows how many transactions flow through each business process during each period, but does not simulate the processing of each individual transaction). In other examples, a process queuing model may be implemented.

Next, consider IT transformation simulation 216. The tasks needed to design, build, implement, operate and maintain the new information technology (and retire old IT) are

simulated. IT inputs for IT transformation simulation 216 are shown by "IT Transformation periods," block 212 and "IT Transformation assumptions," 213. The IT transformation simulation 216 computes the transformation cost per period by phase using IT resource costs and expenses, subject to the schedule. Phases can be serial, overlapping, or concurrent. They tend to be serial when the scope of work can be decomposed into independent releases. They tend to be overlapping or concurrent when the same work must be accomplished at multiple locations.

Consider an example of output (at 221) from IT transformation simulation 216. Results (IT transformation cost 221) may be presented in a spreadsheet, with a row for each month, from Month 1 of Year 1, to the simulation horizon. Columns may show costs to design, build, implement, and operate the new information technology. In the early months, non-zero values may be seen only in the columns showing costs to design, build, and implement. Non-zero values may begin to appear in a column for operation and maintenance cost after the new information technology is designed, built, and implemented.

Next, consider Value simulation 223. The effects of net business benefits such as net savings (Block 220), from the previous simulations, on the client organization's financial position are simulated. So are other alternatives with financial impact, such as acquisition of assets in conjunction with BTO. Block 220 in FIG. 2 represents measures of net business benefits in general. The value simulation 223 computes the impact of the net business benefits (Block 220) on the client's financial statements, subject to additional financial transactions, such as asset acquisition or financing of fees. (Net business benefits at 220, Company financials 222, and any additional financial transactions are value inputs to value simulation 223.) The connection between BTO services and their impact on the economic value of the client organization is symbolized by block 224, "Economic value." This involves outputting one or more measures of economic value (a client's view of how BTO will affect the client organization). When the

client's cost of capital is considered, the economic value of net business benefits (Block 220) from Business Transformation Outsourcing can be substantial.

Continuing with some details of this example in FIG. 2, inputs, simulations, and outputs are further described below. Regarding BTO services 210, the scope of services determines which business processes a BTO service provider will perform for the client organization. Cost assumptions inputs 207 define the human resources needed to perform the business processes today ("As Is") and during outsourcing ("To Be"). The number of full-time equivalent (FTE) resources the client uses today, plus their cost rates by location, are entered. Inputs 212 and 213 define the information technology (IT) resources needed to achieve the transformation from "As Is" to "To Be" processes. Company financials 222 preferably includes the client organization's balance sheet and income statement, along with any BTO service provider's financial transactions, such as asset acquisition or financing of fees.

Simulations and outputs in FIG. 2 may include identifying gaps and flaws in the client organization's current business processes, by comparing them to mature processes. Another example is identifying differences in scope of services, between the As Is and To Be views. These comparisons are useful. The As Is view may look cheaper, but it may be flawed and incomplete. The To Be view will often have larger scope if it is complete and mature.

Regarding output of net business benefits (block 220), one example of output from the simulations is an executive summary of the simulations, which (1) computes the net business value used in the value simulation 223 and (2) summarizes the results of all the simulations. In general, business benefit (block 215), plus process savings (block 219), minus IT transformation cost (block 221), equals net business benefit (block 220). This may involve outputting cost quantities and benefit quantities for a number of years. (See also FIG. 5.)

FIGS. 3A and 3B make up a flow chart, illustrating an example of a BTO simulation process. To begin with an overview, Block 301, configuration, represents creation of a model, and establishing the model's initial state. Blocks 303-309 represent next-step functions that change the model's state to represent the next month in a period to be simulated. Then the process enters block 310, to summarize results. Some examples drawn from one particular instance of business benefits simulation (a spending simulation for sourcing, procurement and payables) will be given for FIGS. 3A and 3B. Thus blocks 303-304 involve references to a spending simulation for sourcing, procurement and payables, as one particular instance of business benefits simulation. Block 309 involves references to net savings, as one particular instance of net business benefits.

In this example, all the simulations are discrete rather than continuous. The simulations do not embody optimization models. BTO engagements are far too complex overall to apply any familiar optimization algorithm. Indeed this is the principal reason for using simulations rather than analytical models to build business cases.

This example begins with block 301, configuration. Here is a list of some items preferably involved in configuration:

Drivers (a driver is an input that is a major determinant of values computed by the simulation.)

Scope of services (business processes such as HR, CRM, Sourcing, Procurement, Payables, etc.)

Options: Data Warehousing, etc.

Schedule: Simulation Horizon, Design and Build + Implementation + Operation Phases

Software Requirements: Customer-licensed vs. Outsourced

Inflation

Pricing Model for Outsourcing

Output Resolution: Monthly, Quarterly, Yearly

Next, consider some details of configuration and inputs represented by block 301. Input stages are presented in order, as they are typically done initially, but inputs can be modified in any order, and all the affected outputs are automatically recomputed. The first input is to a configurator that sets up the simulations. One or more drivers are included (annual spending drives the spending simulation, for example). The scope of services determines which business processes a BTO service provider will perform for the client. Service options are additional products and services that could be provided in support of those business processes. The simulation horizon determines the number of years of simulated time the simulations will cover.

Output formatting controls the amount of detail in outputs: (1) monthly, quarterly, or yearly summaries and (2) details pertinent to the BTO services being simulated, such as commodities for Procurement, customers for CRM, employees for HR, accounts for F&A, or policies for Insurance. Schedule inputs control (1) the number of IT implementation phases and the amount of work done in each and (2) when the transition from the As Is to To Be processes will occur. Data prepared by the configurator includes entities relevant to the BTO services being simulated and schedule parameters, for example. Finally, inputs to and data from the configurator can be displayed or printed.

Continuing with some details represented by block 301, the next set of inputs define the human resources needed to perform the business processes today ("As Is") and during outsourcing ("To Be"). The number of full-time equivalent (FTE) resources the client organization uses today, plus their cost rates by location, are entered. Since client organizations may have resource types that are not in the standard set, the resource types set is editable.

The next set of inputs define the information technology (IT) resources needed to achieve the transformation from As Is to To Be processes. The next set of inputs define non-labor expenses. The non-labor expense types set is editable. For each non-labor expense type, the number of occurrences of an appropriate expense driver is multiplied by the corresponding expense rate. The last set of inputs includes the client organization's balance sheet and income statement, along with any BTO service provider financial transactions, such as asset acquisition or financing of fees.

Decision 302 is at the top of a loop, representing repetition of blocks 303-309 for each month, from Month 1 of Year 1, to the simulation horizon. In other words, the text in 302 could ask: "Repeat for next month within simulation horizon?" The "Yes" branch will be taken to repeat blocks 303-309, until each month in a period to be simulated has been covered. Then the process enters block 310, to summarize results.

Blocks 303 - 304 represent operations included in the benefits simulation, discussed above in connection with FIG. 2 (a spending simulation for sourcing, procurement and payables, for example). Block 303 represents computing drivers for each in-scope business process (e.g. computing spending and number of purchase orders and invoices, for sourcing, procurement and payables). Some example parameters are: Demand Patterns, and Inflation. (Parameters mentioned in this example are data values incorporated in the simulator rather than input by users.)

Block 304 represents computing business benefits relative to an inflation-adjusted baseline (e.g. computing spending savings relative to inflation-adjusted baseline spending, for sourcing, procurement and payables).

Blocks 305 - 307 represent operations included in the process simulation, discussed above in connection with FIG. 2. Block 305 represents computing the number of transactions flowing through each in-scope business process (e.g. computing the

number of purchase orders and invoices for sourcing, procurement and payables). Some example parameters are: Cost Rates by Location for BTO service provider, Non-labor Expenses, Resource Counts and Productivity Rates by Resource Types and Location.

Block 306 represents computing As Is and To Be resources, costs, and price by business process and location. In general, the number of BTO service provider resources needed is computed by (1) entering an appropriate FTE driver for each resource type, (2) looking up the number of occurrences of each driver, and (3) dividing the number of occurrences by a conversion factor. The resulting resource counts are then multiplied times the cost rate for each FTE's location to get As Is and To Be resource costs. (Selecting the right mix of on-site, on-shore, and off-shore resources is involved in achieving service level agreements at a competitive price.) Block 307 represents computing business process benefits in general (computing business process cost savings relative to inflation-adjusted baseline cost, as one specific example).

Block 308 represents operations included in the IT simulation. (See the discussion of IT transformation simulation 216 above in connection with FIG. 2.) Block 308 represents computing information technology resources, costs, and schedule for each phase. Parameters are: Cost Rates by Location, Non-labor Expenses, Resource Counts and Productivity Rates by Resource Types and Location. IT resources are computed separately from non-IT resources because (1) there are no As Is resources to simulate and (2) some IT resources are needed for only a limited time, whereas non-IT resources are needed for the entire simulation. The IT resource type set is editable to accommodate special needs. For each resource type, the number of occurrences of an appropriate driver is divided by a conversion factor that yields work effort. The total work effort for finite-time activities (Design and Build and Implementation) and schedule parameters are used to compute the schedule. The schedule recognizes that

completion of the finite-time activities initiates the on-going IT activities (operation and maintenance). The FTE's needed to meet that schedule are computed. Resource counts are multiplied by cost rate for each FTE's location to get IT resource costs.

Block 309 represents computing net business benefits (e.g. computing net savings, as one particular instance of net business benefits). Block 310 represents summarizing all results by quarter and year. This may involve outputting cost quantities and benefit quantities for a number of years. (See also FIG. 5.)

Block 311 represents operations included in the value simulation. (See the discussion of value simulation 223 above, in connection with FIG. 2.) Block 311 represents computing the impact of net business benefits on a client's business value (e.g. computing impact of net savings on client's business value, as one specific example). Parameters are: Client Financial Statements, Adjustments for industry and geographic comparability.

Block 312 represents analyzing revenue, cash flow, and gross margin by year. Parameters are: Gross Margin and Contingency, Base and Percent of Spending .

Block 313 represents generating tables and charts in time series. This involves outputting one or more measures of economic value for the business transformation outsourcing service.

Regarding FIG. 3, the order of the operations described above may be varied. For example, it is within the practice of the invention for the benefits simulation, process simulation, and IT simulation to occur simultaneously. Blocks in FIG. 3 could be arranged in a somewhat different order, but still describe the invention. Blocks could be added to the above-mentioned diagram to describe details, or optional features; some blocks could be subtracted to show a simplified example.

FIGS. 4A and 4B make up a block diagram, illustrating an example of systems and methods of simulation, including different modes for different end-users. This example in FIGS. 4A and 4B involves representing with simulations the use by a client organization of one or more business transformation outsourcing services, such as HR, CRM, sourcing, procurement, and payables, etc. This example involves performing one or more simulations, such as: a simulation in research and development mode, block 440, a simulation in internal use mode, block 420, and a simulation in external use mode, block 430. These modes are named from the BTO service provider's point of view, so internal use mode, block 420, is suitable for the BTO service provider's internal purposes. Internal purposes include pricing, sales management, risk management, and services delivery planning, for a BTO services arrangement (see block 404). External use mode, block 430, is suitable for the BTO service provider's dealings with a client organization.

Inputs for External use (block 405), are a subset of those for Internal use (block 402), which are in turn a subset of inputs for Research & Development use (block 408). Outputs have the same hierarchical subset relationship. External (block 406), is a subset of Internal (block 403), and Internal is a subset of R&D (block 409). When run for clients (block 430), the simulations are usually deterministic. When the simulator is run without any random variability, its results are deterministic (which means the same inputs always generate the same output). This repeatability is helpful in conversations with client organizations. But when run for internal research purposes (block 440), and risk management (block 420), random variability can be injected and the simulations run many times to quantify expected values. When the simulator is run with random variability in selected variables, its results are stochastic (which means the same inputs generate somewhat different output). These variations are helpful during research (block 440) because multiple simulation runs can be analyzed statistically. Stochastic simulations may be run for some clients.

Block 420 symbolizes conducting simulations in internal use mode, typically by a provider of BTO services. At block at 402, information is gathered about a proposed BTO deal, and inputs are provided to BTO simulator 401. Simulations are run at block 401, producing internal simulation results at block 403. Actions taken at block 404 include analyzing results, serving purposes such as: pricing, sales management, risk management, and services delivery planning. A result of information received at block 404 may be feedback to the model at block 402, symbolized by the arrow connecting block 404 and block 402.

Regarding external use mode, within block 430, actions taken at block 407 include receiving client feedback, on topics such as business value, price, risk sharing, and schedule. A result of information received at block 407 may be feedback to the model at 402, for internal use, symbolized by the downward-looping arrow connecting block 407 and block 402. There also may be feedback to the model at block 405, for adjustment purposes, symbolized by the arrow connecting block 407and block 405.

In the research and development mode, shown in block 440 , research projects are designed at block 408 , and BTO simulations run at block 401 . There may be feedback for purposes of improving or enhancing BTO simulator 401, symbolized by arrows connecting block 409, block 410and block 401, shown inside block 440. Based upon research simulation results at block 409, findings are analyzed and published, at block 411.

The computers, and communications among computers and people, shown in blocks 420, 430, and 440, may serve as means for performing simulations in different modes for different end-users. BTO simulator 401, shown in blocks 420, 430, and 440, may be implemented with software running on one computer, or on different computers that communicate via a network, for example. Inputs may come directly from users at 402, 405, or 408, or from another source, such as stored data for a project. A computer at

block 402, 405, or 408 may serve as means for receiving inputs. A computer at block 401, running simulations, may serve as a means of responding to said inputs, for performing simulations. A computer at block 404, 407, or 411, or a printed document, may serve as means for outputting results such as measures of economic value.

FIG. 5 is a diagram illustrating one example of output from one species of simulation, which simulates particular BTO services: sourcing, procurement, and payables. FIG. 5 shows an example of outputting cost quantities and benefit quantities for a number of years, as a bar graph. Each bar, numbered 501-510, represents one year in a 10-year period that is simulated for a client organization. Each bar, numbered 501-510, represents cost quantities and benefit quantities for a particular year. As shown in the legend in box 509, benefit quantities include spending savings, process savings, and net savings. Net savings is the benefit quantity represented by line 511. Cost quantities include process resources, process expenses, and Information Technology cost. Within each bar, numbered 501-510: spending savings + plus process savings - process resources - process expenses - I T cost = net savings. This is a variation of the general formula mentioned in connection with FIG. 2: business benefit savings + process savings - IT cost = net savings.

This final portion of the detailed description presents a few details of an example implementation, that simulated particular BTO services: sourcing, procurement, and payables. Output similar to FIG. 5 was produced, for example. A simulator was implemented with software capable of running on a desktop computer or laptop computer. This example implementation had a familiar, spreadsheet-style user interface, and was built on spreadsheet software.

Other hardware and software could be used. A simulator could be implemented by using object - oriented programming with the JAVA programming language and database-management software, for example. A simulator could be implemented as a

client-server application for example. Another possibility would be to implement it as a web service (i.e., a computer application executable over an intranet or the Internet).

In conclusion, we have shown examples of computer simulation, that shows the effects of various conditions and decisions, pertaining to a wide range of business transformation outsourcing services.

One of the possible implementations of the invention is an application, namely a set of instructions (program code) executed by a processor of a computer from a computer-usable medium such as a memory of a computer. Until required by the computer, the set of instructions may be stored in another computer memory, for example, in a hard disk drive, or in a removable memory such as an optical disk (for eventual use in a CD ROM) or floppy disk (for eventual use in a floppy disk drive), or downloaded via the Internet or other computer network. Thus, the present invention may be implemented as a computer-usable medium having computer-executable instructions for use in a computer. In addition, although the various methods described are conveniently implemented in a general-purpose computer selectively activated or reconfigured by software, one of ordinary skill in the art would also recognize that such methods may be carried out in hardware, in firmware, or in more specialized apparatus constructed to perform the method.

While the invention has been shown and described with reference to particular embodiments thereof, it will be understood by those skilled in the art that the foregoing and other changes in form and detail may be made therein without departing from the spirit and scope of the invention. The appended claims are to encompass within their scope all such changes and modifications as are within the true spirit and scope of this invention. Furthermore, it is to be understood that the invention is solely defined by the appended claims. It will be understood by those with skill in the art that if a specific number of an introduced claim element is intended, such intent will be explicitly recited

in the claim, and in the absence of such recitation no such limitation is present. For non-limiting example, as an aid to understanding, the appended claims may contain the introductory phrases "at least one" or "one or more" to introduce claim elements. However, the use of such phrases should not be construed to imply that the introduction of a claim element by indefinite articles such as "a" or "an" limits any particular claim containing such introduced claim element to inventions containing only one such element, even when the same claim includes the introductory phrases "at least one" or "one or more" and indefinite articles such as "a" or "an;" the same holds true for the use in the claims of definite articles.